

year, having previously formed a part of New South Wales. The new establishment was removed to a more suitable site at Melbourne in 1863, and was provided in 1870 with a Grubb reflector, 4 feet in aperture and of 20 feet focal length. Mr. Ellery continued to direct its operations until 1895. Eight volumes of astronomical and twenty-eight of meteorological appeared under his directorate, besides two valuable star-catalogues, which were published in 1874 and 1889, and contain the places of 1227 and 1211 stars respectively. Besides his astronomical and meteorological work, Mr. Ellery was much occupied from 1857 to 1870 in the geodetic survey of the colony. Many separate papers by him (chiefly on observations of comets and casual phenomena) appeared from time to time in the *Monthly Notices* of the Royal Astronomical Society, and in the *Transactions* of the Royal Society of Victoria; he held for twenty-three years the post of President of the latter. In addition to all this, he organised and for a time commanded the Victorian Torpedo Corps, now called that of the Submarine Mining Engineers; in retiring from this in 1889 the rank of lieutenant-colonel was conferred upon him. On completing his sixty-eighth year, Mr. Ellery resigned the Directorship of the Observatory, but continued to reside in Melbourne, and held the post of Chairman of the Board of Visitors until his death, which occurred on the 14th of January 1908. Being on a visit to England in 1875, he was present, with the other Directors of southern observatories (Stone of the Cape, and Russell of Sydney) at the dinner given by Airy on the occasion of the bi-centenary of the foundation of the Royal Observatory on the 10th of August. His successor in the Directorship at Melbourne was Mr. Baracchi.

Mr. Ellery was married twice; the first time in 1853, soon after he came to Australia; but his wife dying in 1856, he married two years afterwards a daughter of Mr. Shields of Launceston, Tasmania.

He was elected a Fellow of this Society 1859 July 8, and of the Royal Society in 1873.

W. T. L.

EDWARD GAY, the younger son of James Gay, was born at Dulwich on 1837 December 5. In 1854 he was nominated to a clerkship in the Secretary's department of the General Post Office. He afterwards gained a clerkship at the Treasury, and while holding this appointment he matriculated at Magdalen Hall, Oxford, where he took his degree of B.A. in 1861, and of M.A. in 1863. In 1864 he was selected by Sir Charles Trevelyan to serve in the Financial department of the Indian Civil Service, where he passed through the various grades, until in 1879 he became Accountant-General, Bombay, and Commissioner of Paper Currency. Nine years later he became Controller and Auditor-General, and Head Commissioner of Paper Currency. Mr. Gay's official work allowed but scanty time for astronomical pursuits, but he was always much interested in following the various developments. In 1876 he married Ellen, third daughter of Mr. Thomas Nelson, Waterfield, formerly head of the Secret Political Department in the India Board. In 1891 Mr. Gay retired, and made his home at Oxford

till the autumn of 1907, when he removed to Aldeborough Hall, near Norwich. His death occurred on 1908 April 3. He leaves a widow, one son, and one daughter.

He was elected a Fellow of the Society 1872 December 13.

FREDERICK HOWLETT, a most persevering observer in one department of astronomy, was born in 1821, and died on the 30th of January 1908. After completing his Oxford course, he took holy orders at the usual age, and served first a curacy in the Lake District, where he became acquainted with the poet Wordsworth. The latter seldom refers to astronomy in his poems, but on one occasion he describes the solar eclipse (annular in some places, but a large partial one there) of the 7th. of September 1820, as witnessed from Lake Lugano in North Italy. From Westmoreland Mr. Howlett removed to Hurst Green in Sussex. Whilst there he was a near neighbour of Sir John Herschel, with whom he became very intimate; this intimacy had the natural effect of increasing his early taste for astronomy. Elected a Fellow of the Society in 1861, he took up very energetically the subject of solar spots, of which he obtained a large number of drawings by the method of projection on a screen. After a comparatively short tenure at Beckenham, Kent, Mr. Howlett was preferred to the rectory of East Tisted in Hampshire, where he continued for nearly thirty years, occupied in parochial work and in his astronomical studies, being also much interested in microscopy as applied to vegetable and to the lower forms of animal life. When he felt that he could no longer continue his observations, he presented a complete set of drawings of the solar phenomena, extending over more than thirty years, to the Society. A very interesting result of his observations is the possible untenability of what is called the Wilsonian theory of solar spots. Alexander Wilson, who originated it in 1769, was the first Professor of Astronomy at Glasgow, and a friend of Sir William Herschel, who visited him there. It was contested from the first, but gradually obtained acceptance, and found its way into a large number of popular books, with a rather fanciful drawing showing the effects of perspective on the supposed cavernous spots. Mr. Howlett found this appearance to be in many cases inconsistent with careful observation, thus concluding that when the spots are at a lower level than the surface of the photosphere, the depression is too shallow to exhibit the phenomenon in question with certainty. To quote Miss Clerke (*Hist. Astr.*, p. 155), "We can only infer that the forms of sun-spots are really more various than had been supposed; that they are peculiarly subject to disturbance; and that the level of the nuclei may rise and fall during the phases of commotion, like lavas within volcanic craters."

Mr. Howlett's amiable and kindly disposition greatly endeared him to his parishioners, and he was much esteemed by a large circle of friends. His wife was a daughter of Sir William Rawson (formerly Adams), and sister to Sir Rawson William Rawson.